

# AUTOMOTIVE SERVICE TECHNOLOGY

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The Automotive Service Technology program allows students to gain in-depth knowledge and hands-on training in automotive repair. Our program adheres to Automotive Service Excellence (ASE) curriculum standards, preparing students for entry-level employment in the automotive repair industry.

The Automotive Service Technology program currently holds certification from Automotive Service Excellence (ASE) and offers courses in all eight certification areas. Students can take examinations and earn ASE Student Certification in each of these areas.

This program features instruction with an emphasis on automotive diagnosis, inspection, adjustments and service. In addition, students are taught to test, diagnose, service and replace electronic controls, fuel injection components and accessories, air conditioning units, lighting circuits, and safety and warning devices.

The importance of competent automobile repair in today's mobile society cannot be overstated. Because vehicles have skyrocketed in cost and are kept in service longer, there is a shortage of trained, knowledgeable technicians.

Skilled technicians are needed to perform preventive maintenance, repairs and adjustments. Challenges in this field include servicing electrical systems, brakes, wheel alignments, fuel injection systems, transmissions and driveline repairs, among many others.

Employment opportunities exist in every community and in all parts of the country. Advancement in the field ranges from service technician to manager to shop owner. The opportunities are limitless.

Each student is required to furnish their own tools as approved by the instructor.

High school students may begin the Automotive Services Technology program by taking classes concurrently with their regular studies and earn college credit toward a certificate of proficiency which will apply to the technical certificate and associate of applied science degree.

## Programs

- Automotive Service Technology, Associate of Applied Science (<https://catalog.atu.edu/ozark/programs/automotive-service-technology/automotive-service-technology-aas/>)
- Automotive Service Technology, Certificate of Proficiency (<https://catalog.atu.edu/ozark/programs/automotive-service-technology/automotive-service-technology-cp/>)
- Automotive Service Technology, Technical Certificate (<https://catalog.atu.edu/ozark/programs/automotive-service-technology/automotive-service-technology-tc/>)

## Courses

### AST 1003 Automotive Electronics

This course is an overall study of the fundamental principles of DC and AC electricity, Ohm's Law, series, parallel, and series parallel circuits as related to the automotive field. Ozark CTE General Technology fee: \$51; Ozark Auto Service Fee \$85.

### AST 1004 Gasoline Engine Theory

Provides the student with an introduction to automotive engines. Students learn the proper use and care of hand tools, precision tools, special tools, and equipment. Theory of operation with attention to components is included. Cooling systems, lubrication systems, intake systems, exhaust systems, vehicle maintenance, as well as PC based automotive schematics and flow charts are taught. Safety is emphasized. This course is designated as "Green". Ozark CTE General Technology

### AST 1005 Engine Performance

Prerequisite: AST 1004 Engine Theory.

Provides students with an understanding of fuel, ignition, drivability, and emissions systems. Theory of operation as well as relevant electronic components and computing systems diagnosis is included. This course is designated as "green". Ozark CTE General Technology

### AST 1103 Automotive Brake Systems

Concentrates on the theory and operation of disc and drum brake systems. Basic hydraulic principles as well as the operation and components of the brake foundation systems are taught. The course includes an in-depth study of various power brake systems, including vacuum assisted systems, hydraulically boosted systems, and several types of anti-lock braking systems. Ozark CTE General Technology

### AST 1113 Introduction to Automotive Drivetrains

Designed to cover the entire drivetrain on a late model vehicle with a standard transmission. Instruction will begin with the flywheel and proceed to the transmission, through the differential assembly, and ending at the wheel and hub. Includes the principles of gear reduction as it applies to the theory, operation, and repair of manual transmission, differential, and transaxles. Several types of four-wheel drive systems will be taught. Ozark CTE General Technology

### AST 1203 Automotive Climate Control

Begins with a study of refrigeration, the refrigeration cycle, and basic components of a typical automotive refrigeration system. The function and construction of compressors, lines, expansion valves, expansion tubes, condensers, evaporators, blower motors, and air distribution systems is covered. Automatic temperature control systems including the latest computer monitored systems, and heating and ventilation will also be covered. Service and maintenance procedures as well as shop safety are emphasized. This course is designated as "green". Ozark CTE General Technology

### AST 1213 Automotive Chassis and Steering

Designed to introduce the student to the theory and operation of modern suspension and steering systems. The study of the suspension system includes wheels, tires, hubs, bearings, seals, springs, and vehicle forms. Various designs and construction of each of these components will be covered. Steering and suspension systems start with the basic theory of steering geometry and the related factors. Wheel alignment, construction and operation of the various manual, and power steering components are included. Ozark CTE General Technology

**AST 1223 Advanced Automotive Drivetrains**

Prerequisite: AST 1113.

A continuation of AST 1113. A study of the theory and operation of the entire drivetrain of automotive automatic transmissions and transaxles. Ozark CTE General Technology

**AST 2003 Career Readiness**

This course teaches essential skills (personal characteristic and behavioral skills) that broadly prepare students for a successful transition into the workforce. Essential skills enhance an individual's interactions, job performance, and career prospects such as adaptability, integrity, cooperation, and workplace discipline. Topics addressed include, but may not be limited to, critical thinking/problem solving, oral/written communication, teamwork/collaboration, digital literacy, leadership, professionalism/work ethic, and diversity/inclusion. Lecture: 3 hours. Ozark CTE General Technology

**AST 2103 Advanced Automotive Electronics**

Prerequisite: AST 1003.

This course applies the fundamentals of electronics, including Ohm's Law, basic electrical circuits, wiring diagrams, and common electrical symbols to the automobile. Diagnosis and troubleshooting of electrical circuits is emphasized, including familiarizations with most common types of testing equipment. It includes an in-depth study of the theory and operation of automobile electronic control systems. This course is designated as "green". Ozark CTE General Technology

**AST 2113 Advanced Engine Performance**

Prerequisite: AST 1005.

This course covers advanced theory and testing of engine related fuel and computerized systems. The student should have a basic understanding of basic computer, fuel, and ignition systems. Students will use more advanced equipment for testing. Ozark CTE General Technology

**AST 2203 Diesel Theory**

Prerequisite: AST 1004 Studies the basic principles involved in the construction and operation of diesel engines.

Examines fuel, air, cooling, and control systems of various designs. Discusses engine overhaul and repair, includes gauging proper measuring instruments and tools for these tasks. Studies the design, operation, care, and repair of fuel injection systems used on a variety of diesel engines. Emphasizes care and cleanliness in troubleshooting the fuel preheating, starting, generating, and lighting systems. Lecture: 2 hours, laboratory: 1 hour. Ozark CTE General Technology

**AST 2303 Alternative Automobile Fuels and Technology**

Prerequisite: AST 1003 and AST 2103.

This course applies the fundamentals of electronics, including Ohm's Law, basic electrical circuits, wiring diagrams, and common electrical symbols to the automobile. Diagnosis and troubleshooting of electrical circuits is emphasized, including familiarization with most common types of testing equipment. It includes an in-depth study of the theory and operation of automotive electronic control systems. This course supports the general education goals of the Ozark Campus. Students will utilize through assigned tasks skills of communication, problem solving and technology. Lecture: 3 hours. Ozark CTE General Tech

**AST 2993 Special Topics for Automotive Service Technology**

This course is designed to introduce students to specific areas in Automotive Service Technology. Course content and credit are designed to meet the needs of the student. The topic will vary from offering to offering; thus, the course may be taken more than once for a total of 6 hours. This course requires 15 clock hours per one semester credit hour. Ozark CTE General Technology

## Faculty Instructor

Gary Donberger